



SONY®

**PORTABLE
VIDEOCODER KIT**

DVK-2400

Owner's Instruction Manual

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VIDEOCODER KIT**

DVK-2400



FEATURES

PLEASE READ THIS MANUAL COMPLETELY BEFORE OPERATING YOUR SONY PORTABLE VIDEOREORDER

This operating manual has been carefully prepared to help you to learn how to make high-quality video recordings and to keep your Videoreorder at top operating efficiency. Careful attention to these instructions will ensure peak performance and long operating life.

Your SONY DV-2400 is a specially designed portable Videoreorder made to operate with the SONY Video Camera DVC-2400. This carefully engineered video recording system introduces a new concept in sight-and-sound recordings because of its true portability and fully-automatic performance.

Take the Videoreorder and the camera with you wherever you go. The system will enable you to catch "live" action, and will greatly assist you in teaching, training, promotional activities and in hundreds of other applications.

Tapes recorded by the DVK-2400 system can be played back immediately on any SONY CV-2000* Series Videoreorder.

*All units with model numbers in the 2000 Series.

True portability

This high-quality video and audio recording instrument, housed in a small attaché case, weighs only 10 lbs 13 ozs. It can be carried anywhere, and its shoulder strap keeps both hands free to operate the camera. The self-contained rechargeable batteries provide 1 hour of continuous recording time (with three 5-inch reels of tape). If desired, the Videoreorder can be operated from household power (117V, 60 Hz) by connecting the optional AC Power Adaptor Model AC-2400.

Solid State Reliability

Designed by the leader in transistor technology, the DV-2400 combines trouble-free, solid state electronics with a rugged tape-transport mechanism.

Fully Automatic performance

Just thread the tape on the Videoreorder; turn it on, and push the start button to start the recording. Picture (video signals) and sound (audio signals) are taped at the optimum recording levels automatically. Automatic controls in the camera and in the Videoreorder keep track of recording levels for you.

Complete Tape Interchangeability

Recordings taped on the DV-2400 can be played back on any SONY CV-2000 Series Videoreorder. Improved SONY Video Tape V-30D permits 20 minute recordings. The tape may be played many times, or the tape may be erased and used to make new recordings over and over again.

Convenient Facilities

Meter (to check the condition of the battery)
Automatic shut-off switch (to indicate that the tape comes to the end)
Handle for fast winding (to wind up tape left on the Supply Reel at the end of a recording session)
Plug-in type connecting cable (a single cable completes all connections between the Camera and the Videoreorder.)

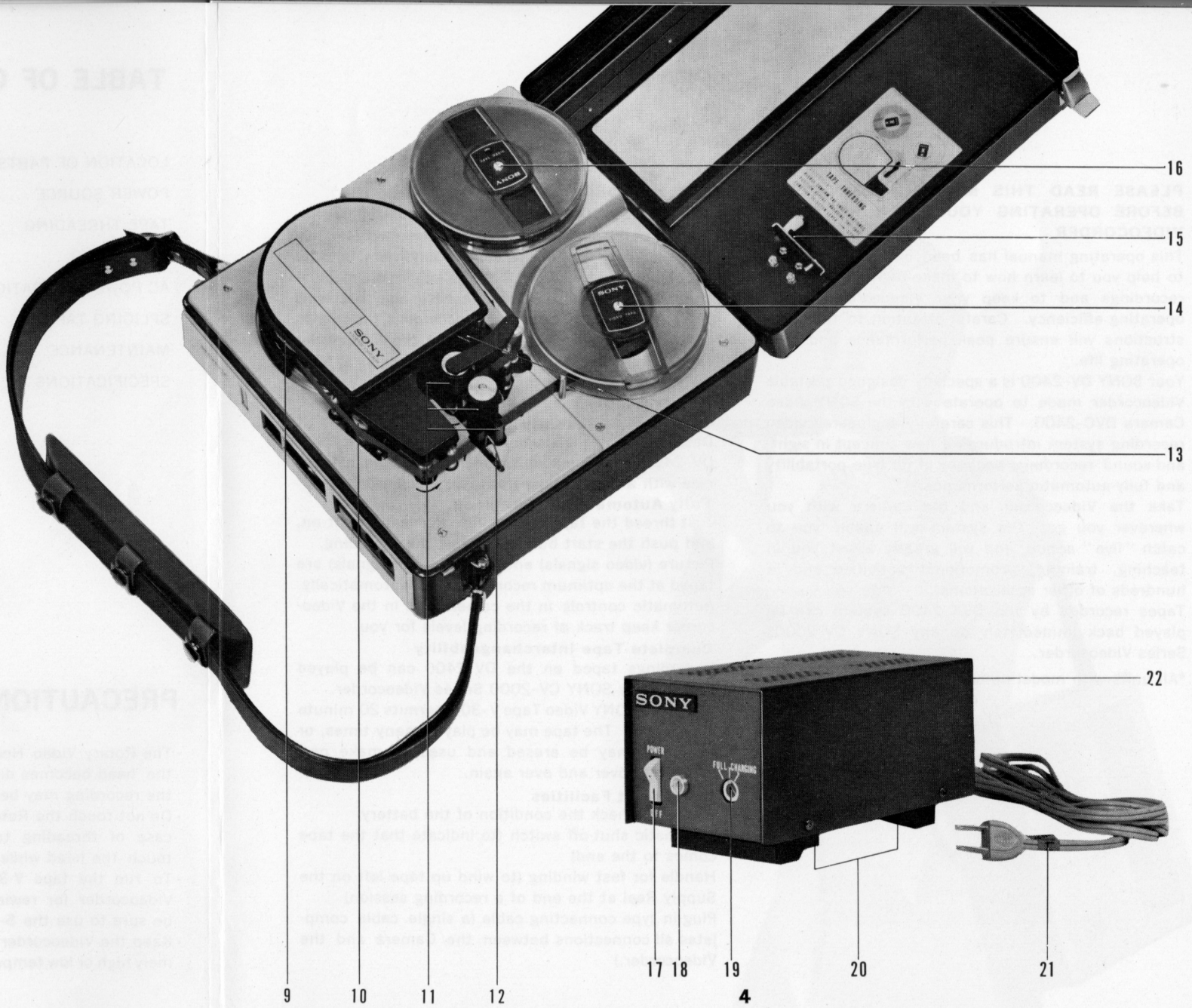
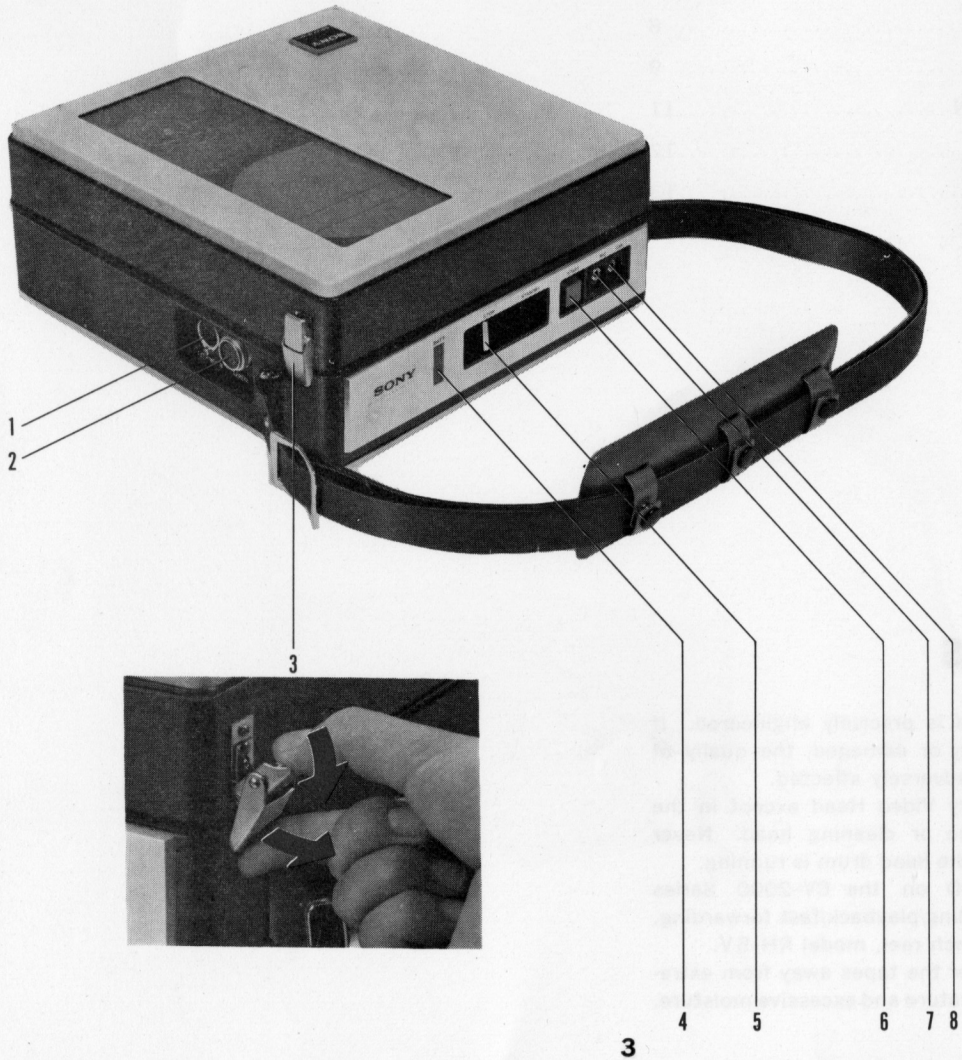
TABLE OF CONTENTS

LOCATION OF PARTS AND CONTROLS.....	3
POWER SOURCE	6
TAPE THREADING.....	8
RECORDING.....	9
AC POWER OPERATION	11
SPLICING TAPE	12
MAINTENANCE.....	13
SPECIFICATIONS	15

PRECAUTIONS

- The Rotary Video Head is precisely engineered. If the head becomes dirty or damaged, the quality of the recording may be adversely affected.
- Do not touch the Rotary Video Head except in the case of threading tape or cleaning head. Never touch the head while the head drum is running.
- To run the tape V-30D on the CV-2000 Series Videocorder for rewinding/playback/fast forwarding, be sure to use the 5-inch reel, model RH-5V.
- Keep the Videocorder or the tapes away from extremely high or low temperature and excessive moisture.

LOCATION OF PARTS AND CONTROLS



PORTABLE VIDEORECORDER DV-2400

1. EXTERNAL POWER CONNECTOR

To connect the optional AC Power Adaptor, Model AC-2400. The Videorecorder can be operated directly from the household power line when the AC-2400 has been connected.

2. CAMERA CONNECTOR

To connect the SONY Video Camera DVC-2400.

3. COVER LOCK

Open the lock as illustrated.

4. BATTERY INDICATOR

The pointer shows battery condition when the Videorecorder is operating (Function Lever in the STANDBY position).

white zone reading....shows good battery condition.
Red zone readingshows that batteries need to be recharged.

5. FUNCTION LEVER

STANDBY position....To turn on the Videorecorder and the camera connected to the Videorecorder.

STOP positionTo turn off the Videorecorder and the camera.

6. START BUTTON

To start recording, push the button.

7. MICROPHONE JACK

To connect a low impedance microphone.

8. EARPHONE JACK

To monitor the audio signal (sound) during the recording operation, connect the earphone (supplied) to this jack.

9. ROTARY VIDEO HEAD

Records video signals.

10. AUDIO/CONTROL HEAD

Records audio and servo control signals.

11. PINCH ROLLERS AND CAPSTAN

Apply driving motion to the tape.

12. AUTOMATIC SHUT-OFF SWITCH

At the end of the tape, this switch acts and shuts off the picture on the viewfinder of the camera.

13. ERASE HEAD

Previous recordings are erased as the tape passes over this head.

14. TAKE-UP REEL SPINDLE

Place an empty-reel on this spindle.

15. WINDING HANDLE

To wind tape remaining on the supply reel.

16. SUPPLY REEL SPINDLE

Place a full reel on this spindle.

BATTERY CHARGER BC-2400

17. POWER ON/OFF SWITCH

To turn on the charger, press the upper portion of the switch.

18. POWER LAMP

Lights when the charger is turned on.

19. CHARGING METER

The pointer shows charging condition.

While charging is proceeding, the pointer stays in black zone. When the batteries are recovered, the pointer goes back in red zone.

20. CHARGING CONNECTORS

Contact with the terminals of the batteries.

21. AC POWER CORD

Insert to an AC outlet (117V, 60Hz).

22. FUSE

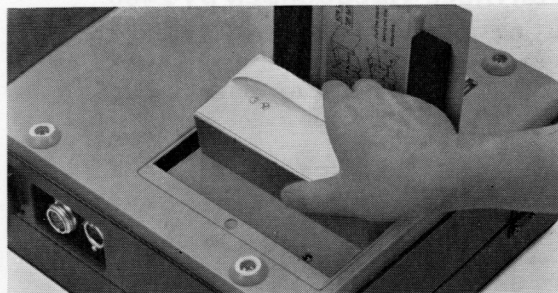
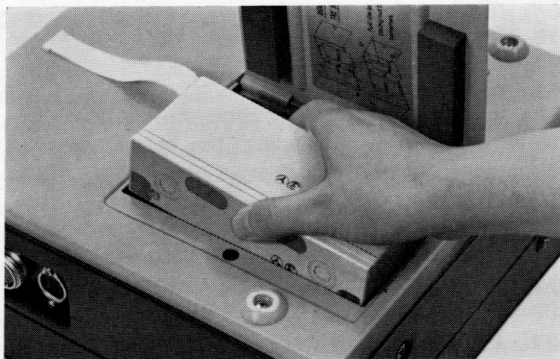
Protects the charger from overload.

POWER SOURCE

This portable Videocorder operates from rechargeable batteries. Batteries are normally recharged from the Battery Charger BC-2400, which is supplied as a standard equipment with the DVK-2400 system. An alternative source of power is the optional AC Power Adaptor, Model AC-2400, which permits AC operation and battery charging (batteries are charged while they are inside the Videocorder, refer to page 11.)

Battery installation

1. Open the battery compartment cover by pulling the catch of the cover.
2. Insert the batteries (supplied), Centralab RP-626 or equivalent. Be sure to match the polarity of the batteries to the connectors of the battery compartment as illustrated on the inside of the compartment door. The printed sides of the batteries should face the inside the battery compartment.



3. Close the compartment cover by pushing the catch.

CAUTION

Improper installation of batteries may cause the battery shorting and may strongly damage the batteries.

Battery Life

Fully-charged batteries allow approximately one hour of continuous operation of the Videocorder and the camera. The batteries can be recharged approximately 100 times with the Battery Charger BC-2400 (supplied) or the optional AC Power Adaptor, AC-2400 (see page 11).

The pointer of the Battery Indicator shows battery condition when the Videocorder is turned on; the white-zone reading shows that the batteries are in good condition; a red-zone reading shows that the batteries have become discharged. Recharge them as directed in the following section.

Good battery condition



NOTE:

The Videocorder and camera will not perform properly with weak batteries. In addition, continuous operation with discharged batteries will decrease the capacity of the batteries. If the pointer of the Battery Indicator is in the red-zone, recharge the batteries at once.

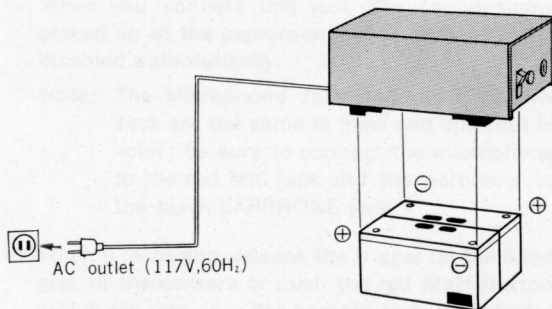
When the Videocorder is in the "STANDBY" condition, the batteries are drained at the same rate as when recordings are in progress.

The batteries are fully charged when they leave the factory. However, idle batteries will discharge slowly over a long period of time. In that case, the batteries may not yield a full one-hour recording time when they are first put into service. Full capacity will be restored, however, after the first recharge.

Recharging ... with the charger BC-2400 (supplied)

1. Take the batteries out of the Videocorder by pulling the ribbon inside the compartment.
2. Put the charger on the batteries so that the printed sides of both batteries face outside and the terminals of the batteries contact those of the charger.

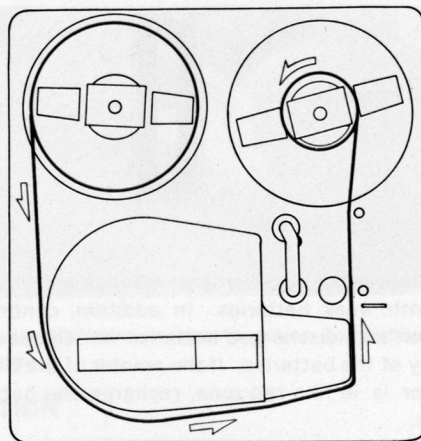
3. Connect the AC power cord of the charger to an AC outlet (117V, 60 Hz).
4. Press the upper portion of the Power ON-OFF Switch on the charger. The red Power Lamp will light, showing that the charger is operating. Recharge the batteries for about 10 hours. While the batteries are charging, the pointer on the Charging Meter will remain in the black zone. When the batteries recover for use, the pointer will swing back into the red zone. At the FULL position, the batteries will allow approx. one hour of continuous operation of the Videocorder and the camera.
5. After the batteries have been charged, remove the Battery Charger and reinsert the batteries into the Videocorder. Remember to put the ribbon into place first, so that the batteries can be removed easily next time.



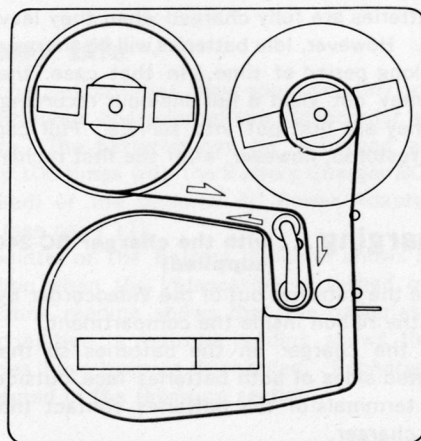
TAPE THREADING

1. Place a full reel on the Supply Reel Spindle and an empty reel on the Take-up Reel Spindle. Be sure that the slot of the reel engages the guide pin of the reel holder.
2. Unwind about 2 feet of tape and thread it to the Take-up Reel by passing around the outer tape path, inside the automatic shut-off switch and between the Pinch Roller and the Capstan as shown. (Picture 1)
3. Wind the tape around the Take-up Reel three or four times.
4. Turn the Supply Reel counterclockwise to make some slack in the tape.
5. Form a loop in the slack tape and drop it into the tape path around the tape guide, the Pinch Rollers and the Erase Head as shown. (Picture 2)
6. Turn the Take-up reel by hand to take up any excess slack in the tape path.

Picture 1



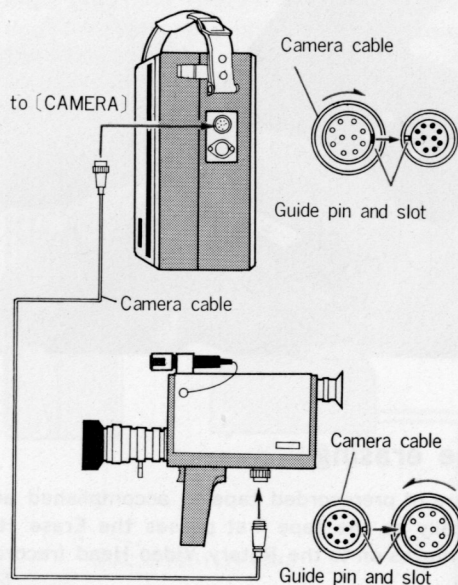
Picture 2



RECORDING OPERATION

1. Connect the Video Camera to the Videocorder using the camera cable supplied with the camera. Plug the 10-pin end into the Camera Connector of the Videocorder by matching the slot of the plug with the guide pin of the receptacle. Turn the locking collar of the cable clockwise until the cable locks firmly into place.

Plug the other end of the cable (female) into the Videocorder Connector on the camera by matching the guide pin of the cable with the slot of the connector on the camera. Turn the locking collar on the camera counterclockwise until the cable locks firmly into place.



2. Set the Function Lever to the STANDBY position. This turns on the Videocorder and the camera.
3. Remove the lens cap and point the camera at the subject. Observe the picture in the camera's viewfinder.
4. Adjust the camera to obtain a satisfactory picture as displayed on the viewfinder. To start the recording, depress the red Start Button on the control panel of the Videocorder, or pull the trigger on the hand grip of the camera.
Sound picked up by the camera-mounted microphone will be recorded simultaneously. To monitor the sound, plug the earphone (supplied) into the Earphone Jack on the control panel of the Videocorder. Pictures and sound levels are set automatically in the DVC-2400 Video Camera and the DV-2400 Videocorder. The operator need concern himself only with optical focus and camera pointing.

The Microphone plug on the DV-2400 Videocorder also accepts a low impedance microphone. When you connect this jack, the sound signal picked up at the camera-mounted microphone is disabled automatically.

Note: The Microphone Jack and the Earphone Jack are the same in form and different in color; be sure to connect the microphone to the red MIC jack and the earphone to the black EARPHONE jack.

5. To stop recording, release the trigger on the hand grip of the camera or push the red Start Button and it will pop up. The camera and Videocorder will remain in the STANDBY condition.

6. At the end of the recording session, set the Function Lever to STOP. Remove the full reel of tape from the Take-up Reel Spindle.
7. To playback the recording made on the Portable Videocorder, place the full reel on the take-up reel spindle and place an empty 5-inch reel (RH-5V) on the supply reel spindle of any SONY CV-2000 Series Videocorder. Rewind the tape to the beginning, and then play the tape in the usual way.

Note on reel:

Rewinding, playing back and/or fast forwarding of the tape V-30D should be made with the 5-inch reel Model RH-5V. If you operate the tape V-30D with 7 inch reel, Model RH-7V or RH-72V, the tape may be adversely affected.

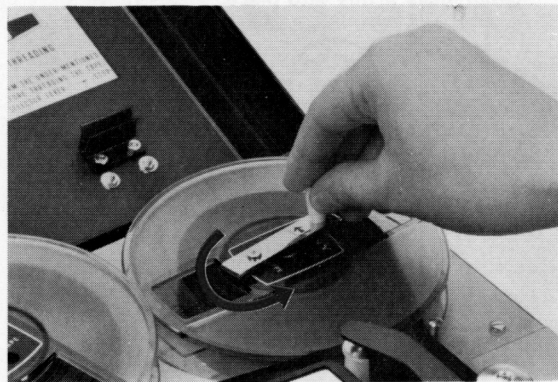
Automatic Shut-off Switch

At the end of the tape, or when the tape breaks out, the automatic shut-off switch acts and the picture on the viewfinder disappeared (the Record Lamp on the camera lights on and the DV-2400 Videocorder remains in the record mode). In this case be sure to set the Function Lever to the STOP position, otherwise the batteries are drained as the Videocorder mechanism is still on.

To wind tape remaining on the supply reel

In many cases there may be a quantity of tape left on the Supply Reel at the end of a recording session. Wind the remaining tape onto the Take-up Reel as follows: Engage the Winding Handle* with the Take-up Reel by inserting the pin of the handle into the slot of the reel hub. Wind up the tape by turning the handle counterclockwise.

* The Winding Handle is clipped to the back cover of the Videocorder.



Tape erasing

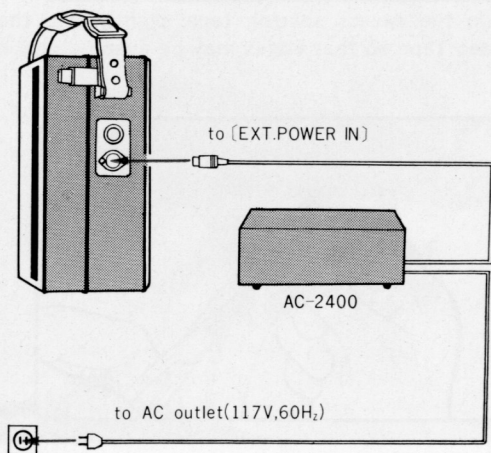
Erasement of prerecorded tape is accomplished automatically as the tape first passes the Erase Head then moves on to the Rotary Video Head (recording head).

AC POWER OPERATION

The optional AC Power Adaptor, Model AC-2400, permits operation without batteries in those applications where AC power (117 volts, 60 Hz) is available. In addition, the AC-2400 can be used to charge the batteries of the Videocorder without removing the batteries from the Videocorder.

AC power operation

1. Connect the 2-pin plug of the adaptor to an AC outlet.
2. Connect the round plug of the adaptor to the External Power Connector on the Videocorder.
3. Press the Power ON-OFF Switch of the adaptor and power will be supplied to the Videocorder. The Videocorder operates in the same manner whether power is supplied by the AC-2400 or the batteries.



To recharge the batteries with the AC-2400

1. Plug in the AC-2400 as outlined in the previous paragraph.
2. Place the Function Lever on the Videocorder to the STOP position.

The batteries will charge when these steps have been followed. It is not necessary to take the batteries out of the Videocorder.

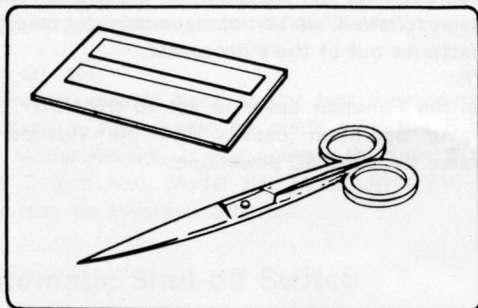
NOTE:

When the Function Lever is set to STANDBY, the charging operation ceases and the Videocorder operates from the AC power line.

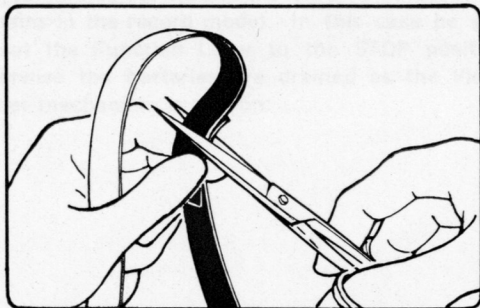
SPLICING TAPE

1. Use the Splicing Tape supplied with your Video-corder. (Video Splicing Tape Scotch #390 may be substituted.)

Note: Never use regular audio splicing tape, as damage to Rotary Video Heads will result.



2. Overlap the tape ends approximately $\frac{1}{2}$ inch and make a cut across both tapes at right angles to the length of the tapes.

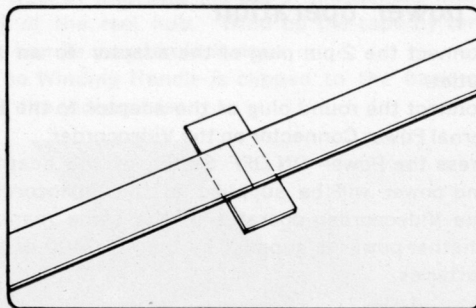


3. Align the ends carefully so that they fit together perfectly.

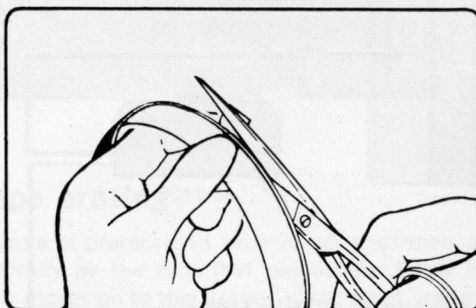
4. Press a piece of splicing tape firmly over the shiny sides of the ends.

Make sure that the joint is firm.

Note: If any space is left between joints, the Rotary Video Head might be damaged.



5. Trim the excess splicing tape slightly into the Video Tape so that edges may be even.



MAINTENANCE

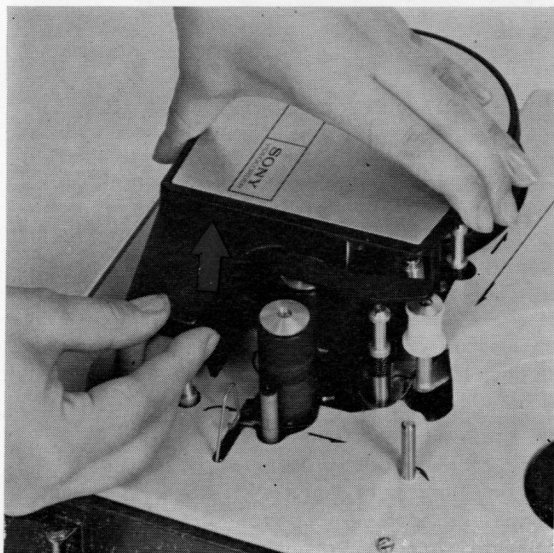
If the picture becomes noisy, cleaning and demagnetizing of the heads, and the cleaning of the tape path may be required.

NOTE: Before attempting to clean the Rotary Video Head, be sure that the Function Lever is set to the STOP position.

The picture quality may be affected by the heads of the Videocorder used for playback. Therefore, check the heads on the playback Videocorder simultaneously.

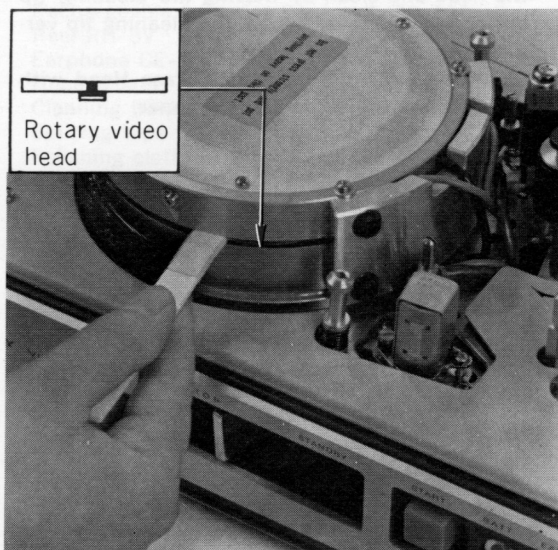
1. Cleaning the Heads

- (1) Gently pull the head cover straight up and remove it from the Videocorder.



- (2) Move the Rotary Video Head to the cleaning groove (as shown below) by gently pushing the head* with the cleaning tip.

* A dummy head is coupled at the opposite side of the Rotary Video Head for balancing.



- (3) Gently hold the edge of the Rotary Video Head with your finger tip to keep the head from moving.
- (4) Saturate the cleaning tip with the cleaning fluid (supplied). Press the cleaning tip lightly against the head and clean by moving the cleaning tip horizontally. Never move the cleaning tip vertically.
- Clean the Audio/Control Head, Erase Head with the cleaning tip in the same manner.



Erase head

Audio/Control head

2. Demagnetizing the Heads

Through constant use the heads may become slightly magnetized; this could cause a distorted picture. In extreme cases it could cause a partial erasing of the tape. Heads may be demagnetized by using standard studio Head Demagnetizers.

Be sure that the Head Demagnetizer never touches the Rotary Head.



Head demagnetizer

3. Cleaning Tape Path

To keep an intimate contact between heads and tape, it is advisable to clean the tape path and the tape guides from time to time; take a soft cloth and carefully wipe the portion over which the tape travels. In case the deposits cannot be removed, dampen the cloth with the cleaning fluid or denatured alcohol.

4. Cleaning the Cabinet

If the cabinet or panel becomes dirty, clean it with the polishing cloth (supplied). Never use solvents, thinner or acetone for cleaning; damage to the cabinet or panel will result.

SPECIFICATIONS

Portable Videocorder DV-2400

Video recording

system: Slant-track scanning

Recording signal: 2:1 interlaced composite video signal based on American TV standards (supplied through the video camera DVC-2400)

Recording time: 20 minutes continuously, using V-30D tape (850 ft)

Tape speed: $7\frac{1}{2}$ ips (inch per second)

Tape width: $\frac{1}{2}$ "

Video modulation

system: Frequency modulation

Resolution: Approximately 220 lines*

Video signal-to-noise

ratio: Greater than 40 db*

Video input: 1.0V (peak to peak), sync negative, 50 ohms, at Pin 1 of the camera cable connector. (Ground return Pin 2.)

Audio input: 65 db, 600 ohms, at Pin 8 of the camera cable connector. (Ground return Pin 7.)

Audio frequency

range: 100~8000 Hz*

Audio signal-to-noise

ratio: Greater than 38 db*

Microphone jack: Mini jack, input impedance 600 ohms

Earphone jack: Mini jack, output impedance 100 K ohms

Power requirements: DC 12V, 10.5W (without connecting DVC-2400)

Semiconductors: 41 transistors, 21 diodes

Dimensions: $4\frac{7}{8}(h) \times 11\frac{5}{8}(d) \times 11\frac{1}{4}(w)$ "

Weight: 10 lbs. 13 ozs (without batteries)

*Playback on a CV-2000 Series Videocorder.

Hz (hertz): cycles per second

Portable Videocorder Kit DVK-2400

Portable Videocorder DV-2400

Battery Charger BC-2400

Rechargeable batteries Centralab RP-626 $\times 2$

Reel RH-5V

Earphone CE-3

Head Cleaner tip

Cleaning fluid

Splicing tape

Polishing cloth

Design and specifications subject to change without notice.

